APPENDIX A
(clean version of amended claims)

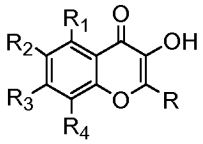
1. **(Currently Amended)** A method comprising:

photochemically generating an oxidopyrylium species from a 3-hydroxychromone derivative; and

performing a cycloaddition reaction between the oxidopyrylium species and a dipolarophile to form a cycloadduct.

2. **(Currently Amended)** The method of claim 1, wherein the oxidopyrylium species is generated via a process comprising an excited state intramolecular proton transfer.

3. **(Currently Amended)** The method of claim 1, wherein the oxidopyrylium species is photochemically generated from a 3-hydroxychromone derivative with the following chemical structure:

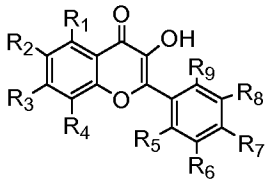


(I)

wherein R_1, R_2, R_3, R_4 and R are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

4. **(Currently Amended)** The method of claim 1, wherein the oxidopyrylium species is photochemically generated from a 3-hydroxychromone derivative with the following chemical structure:

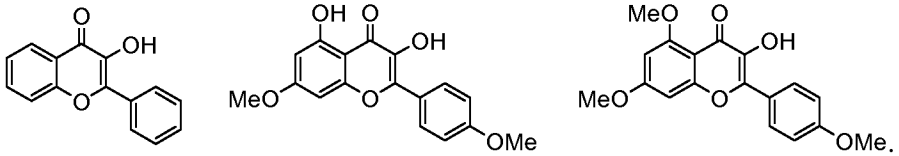


(II)

wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 and R_9 are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

5. **(Currently Amended)** The method of claim 4, wherein the 3-hydroxychromone derivative has one of the following chemical structures:



6-7. **(Cancelled)**

8. **(Currently Amended)** The method of claim 1, wherein the cycloaddition reaction comprises a 1,3-dipolar cycloaddition reaction.

9. **(Currently Amended)** The method of claim 1, further comprising converting the

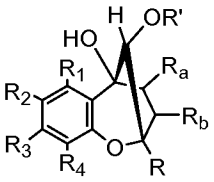
cycloadduct.

10-16. **(Cancelled)**

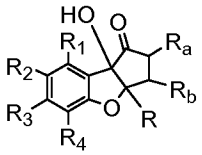
17. **(Currently Amended)** The method of claim 1, wherein the dipolarophile is a cinnamate derivative.

18. **(Cancelled)**

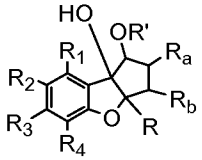
19. **(Currently Amended)** The method of claim 9, wherein the cycloadduct is converted into a compound selected from the group consisting of:



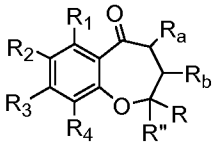
(VI)



(VII)



(VIII)



(IX)

wherein:

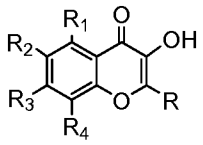
R' is selected from the group consisting of hydrogen, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-S(O)R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, and $-N(R_x)S(O)_2R_x$; and

R_1, R_2, R_3, R_4, R, R", R_a and R_b are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$;

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

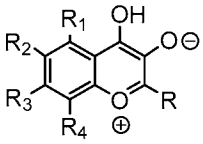
20. **(Currently Amended)** The method of claim 1, wherein:

the 3-hydroxychromone derivative is of formula (**I**):



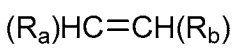
(**I**);

the oxidopyrylium species is of formula ($\mathbf{I_T}$):



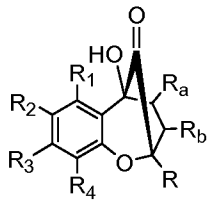
($\mathbf{I_T}$);

the dipolarophile is of formula (**IV**):



(**IV**);

and the cycloadduct is of formula (**V**):



(**V**)

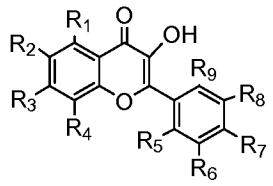
wherein R_1, R_2, R_3, R_4, R, R_a and R_b are identical or different and selected from the group

consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

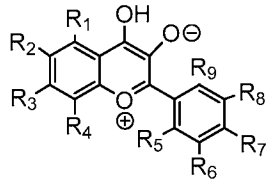
21. **(Currently Amended)** The method of claim 1, wherein:

the 3-hydroxychromone derivative is of formula (**II**):



(**II**);

the oxidopyrylium species is of formula ($\mathbf{II_T}$):



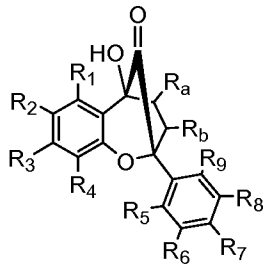
($\mathbf{II_T}$);

the dipolarophile is of formula (**IV**):

$$(R_a)HC{=}CH(R_b)$$

(**IV**);

and the cycloadduct formed is of formula (**V'**):

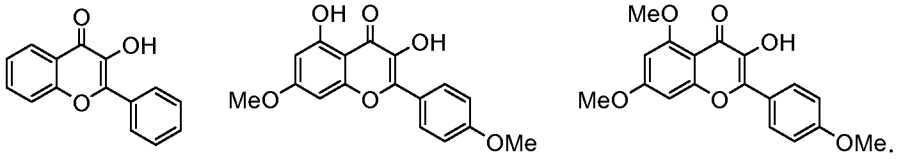


(**V'**)

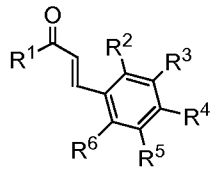
wherein R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9, R_a and R_b are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

22. **(Currently Amended)** The method of claim 21, wherein the 3-hydroxychromone derivative has one of the following chemical structures:



23. **(Currently Amended)** The method of claim 20 or 21, wherein the dipolarophile (**IV**) is a compound with the following chemical structure:



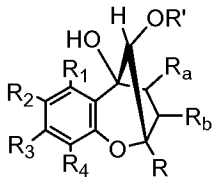
wherein R^1 is selected from the group consisting of hydrogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, and a protecting group; and

wherein R^2, R^3, R^4, R^5, and R^6 are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

24-29. **(Cancelled)**

30. **(Currently Amended)** The method of claim 20, further comprising converting the compound of formula (**V**) into a compound of formula (**VI**):



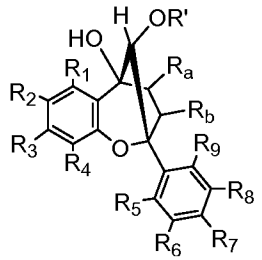
(VI)

wherein R' is selected from the group consisting of hydrogen, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic,

aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-S(O)R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, and $-N(R_x)S(O)_2R_x$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

31. **(Currently Amended)** The method of claim 21, further comprising converting the compound of formula (**V'**) into a compound of formula (**VI'**):

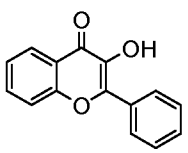
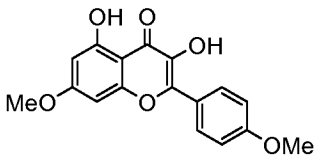
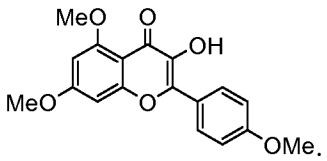


(VI')

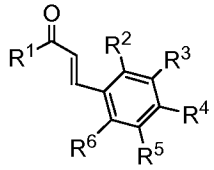
wherein R' is selected from the group consisting of hydrogen, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-S(O)R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$,and $-N(R_x)S(O)_2R_x$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

32. **(Currently amended)** The method of claim 31, wherein the 3-hydroxychromone derivative has one of the following chemical structures:

33. **(Currently Amended)** The method of claim 30 or 31, wherein the dipolarophile (**IV**) is a compound with the following chemical structure:



wherein R^1 is selected from the group consisting of hydrogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, and a protecting group; and

wherein R^2, R^3, R^4, R^5, and R^6 are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

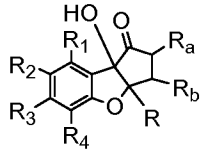
wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

34. **(Currently Amended)** The method of claim 30 or 31, wherein converting the compound of formula (**V**) or (**V'**) into a compound of (**VI**) or (**VI'**) comprises a reduction.

35. **(Original)** The method of claim 34, wherein the reduction comprises using $NaBH_4$ or $Me_4BH(OAc)_3$.

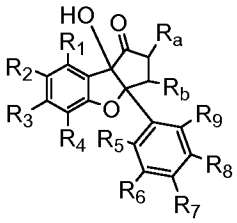
36. **(Currently Amended)** The method of claim 30 or 31, wherein converting the compound of formula (**V**) or (**V'**) into a compound of (**VI**) or (**VI'**) comprises addition of a nucleophile.

37. **(Currently Amended)** The method of claim 20, further comprising converting the compound of formula (**V**) into a compound of formula (**VII**):



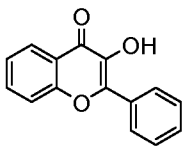
(**VII**).

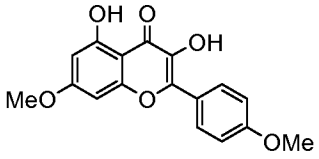
38. **(Currently Amended)** The method of claim 21, further comprising converting the compound of formula (**V'**) into a compound of formula (**VII'**):

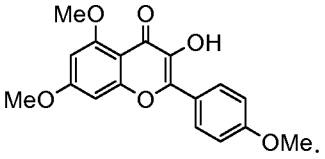


(**VII'**).

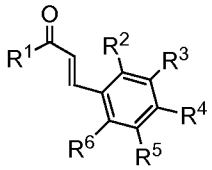
39. **(Currently amended)** The method of claim 38, wherein the 3-hydroxychromone derivative has one of the following chemical structures:







40. **(Currently Amended)** The method of claim 37 or 38, wherein the dipolarophile (**IV**) is a compound with the following chemical structure:



wherein R^1 is selected from the group consisting of hydrogen, hydroxy, alkoxy, aryloxy,

heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, and a protecting group; and

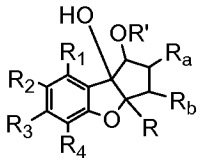
wherein R^2, R^3, R^4, R^5, and R^6 are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$;

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

41. **(Currently Amended)** The method of claim 37 or 38, wherein converting the compound of formula (**V**) or (**V'**) into a compound of formula (**VII**) or (**VII'**) comprises an α-ketol (acyloin) rearrangement and, optionally, a hydroxyl-directed reduction.

42. **(Original)** The method of claim 41, wherein the α-ketol (acyloin) rearrangement comprises a base-mediated reaction.

43. **(Currently Amended)** The method of claim 20, further comprising converting the compound of formula (**V**) into a compound of formula (**VIII**):



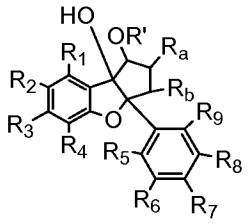
(**VIII**)

wherein R' is selected from the group consisting of hydrogen, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic,

aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-S(O)R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, and $-N(R_x)S(O)_2R_x$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

44. **(Currently Amended)** The method of claim 21, further comprising converting the compound of formula (**V'**) into a compound of formula (**VIII'**):

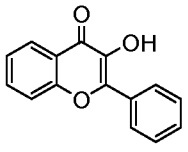


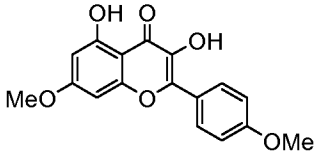
(VIII')

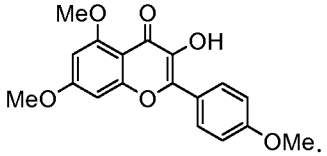
wherein R' is selected from the group consisting of hydrogen, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-S(O)R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, and $-N(R_x)S(O)_2R_x$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

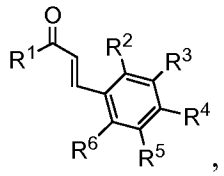
45. **(Currently amended)** The method of claim 44, wherein the 3-hydroxychromone derivative has one of the following chemical structures:







46. **(Currently Amended)** The method of claim 43 or 44, wherein the dipolarophile (**IV**) is a compound with the following chemical structure:



wherein R^1 is selected from the group consisting of hydrogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, and a protecting group; and

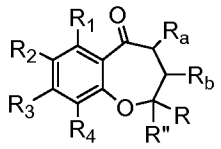
wherein R^2, R^3, R^4, R^5, and R^6 are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

47. **(Currently Amended)** The method of claim 43 or 44, wherein converting the compound of formula (**V**) or (**V'**) into a compound of formula (**VIII**) or (**VIII'**) comprises an α-ketol (acyloin) rearrangement and, optionally, a hydroxyl-directed reduction.

48. **(Original)** The method of claim 47, wherein the α-ketol (acyloin) rearrangement comprises a base-mediated reaction.

49. **(Currently Amended)** The method of claim 20, further comprising converting the compound of formula (**V**) into a compound of formula (**IX**):

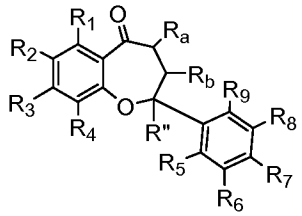


(IX)

wherein R" is selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

50. **(Currently Amended)** The method of claim 21, further comprising converting the compound of formula (**V'**) into a compound of formula (**IX'**):

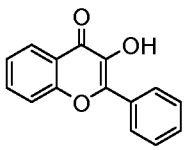
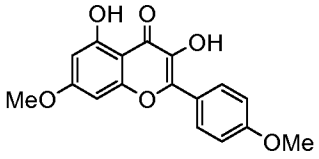
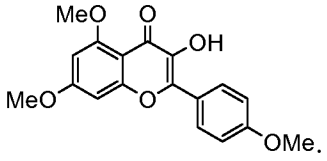


(IX')

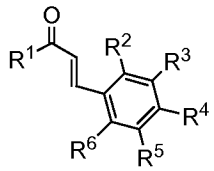
wherein R" is selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

51. **(Currently Amended)** The method of claim 50, wherein the 3-hydroxychromone derivative has one of the following chemical structures:

52. **(Currently Amended)** The method of claim 49 or 50, wherein the dipolarophile (**IV**) is a compound with the following chemical structure:



wherein R^1 is selected from the group consisting of hydrogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, and a protecting group; and

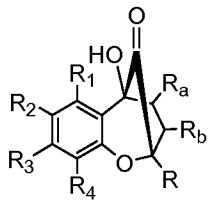
wherein R^2, R^3, R^4, R^5, and R^6 are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

53. **(Currently Amended)** The method of claim 49 or 50, wherein converting the compound of formula (**V**) or (**V'**) into a compound of formula (**IX**) or (**IX'**) comprises an oxidative cleavage.

54. **(Original)** The method of claim 53, wherein the oxidative cleavage comprises using $Pb(OAc)_4$.

55. **(Withdrawn/Currently Amended)** A compound having the following chemical structure:

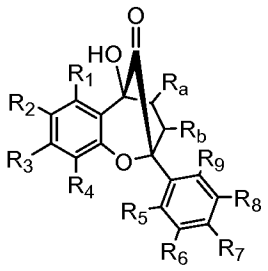


(V)

wherein R_1, R_2, R_3, R_4, R, R_a and R_b are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$;

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

56. **(Withdrawn/Currently Amended)** The compound of claim 55 having the following chemical structure:

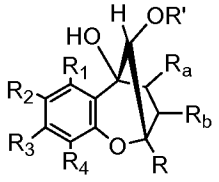


(V')

wherein R_5, R_6, R_7, R_8, and R_9 are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

57. **(Withdrawn/Currently Amended)** A compound having the following chemical structure:



(VI)

wherein:

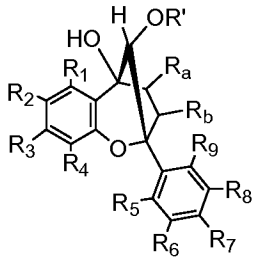
R' is selected from the group consisting of hydrogen, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-S(O)R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, and

$-N(R_x)S(O)_2R_x$; and

R_1, R_2, R_3, R_4, R, R_a and R_b are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$;

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

58. **(Withdrawn/Currently Amended)** The compound of claim 57 having the following chemical structure:



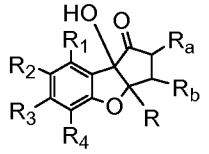
(VI')

wherein R_5, R_6, R_7, R_8, and R_9 are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of

hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

59. **(Withdrawn/Currently Amended)** A compound having the following chemical structure:

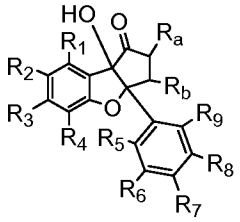


(VII)

R_1, R_2, R_3, R_4, R, R_a and R_b are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$;

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

60. **(Withdrawn/Currently Amended)** The compound of claim 59 having the following chemical structure:



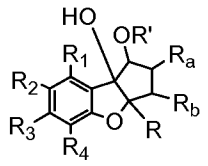
(VII')

wherein R_5, R_6, R_7, R_8, and R_9 are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy,

thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

61. **(Withdrawn/Currently Amended)** A compound having the following chemical structure:



(VIII)

wherein:

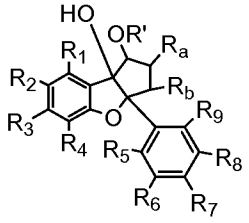
R' is selected from the group consisting of hydrogen, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-S(O)R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, and $-N(R_x)S(O)_2R_x$; and

R_1, R_2, R_3, R_4, R, R_a and R_b are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$,

$-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$;

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

62. **(Withdrawn/Currently Amended)** A compound having the following chemical structure:

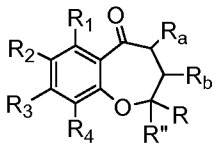


(VIII')

wherein R_5, R_6, R_7, R_8, and R_9 are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

63. **(Withdrawn/Currently Amended)** A compound having the following chemical structure:



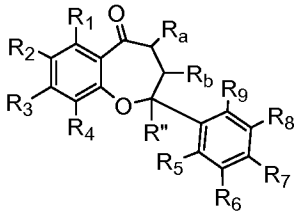
(IX)

wherein R_1, R_2, R_3, R_4, R, R", R_a and R_b are identical or different and selected from the

group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$;

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

64. **(Withdrawn/Currently Amended)** The compound of claim 63 having the following chemical structure:



(IX')

wherein R_5, R_6, R_7, R_8, and R_9 are identical or different and selected from the group consisting of hydrogen, halogen, hydroxy, alkoxy, aryloxy, heteroalkoxy, heteroaryloxy, thioalkyl, thioaryl, acyl, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, heteroaryl, alkylamino, amino alkyl, arylamino, amino aryl, a protecting group, $-NO_2$, -CN, $-CF_3$, $-CH_2CF_3$, $-CHCl_2$, $-CH_2OH$, $-CH_2CH_2OH$, $-CH_2SO_2CH_3$, $-C(=O)R_x$, $-CO_2(R_x)$, $-C(=O)N(R_x)_2$, $-OC(=O)N(R_x)_2$, $-OC(=O)R_x$, $-OCO_2R_x$, $-S(O)R_x$, $-S(O)_2R_x$, $-NR_x(CO)R_x$, $-N(R_x)CO_2R_x$, $-N(R_x)C(=O)N(R_x)_2$, $-N(R_x)S(O)_2R_x$, and $-S(O)_2N(R_x)_2$,

wherein each occurrence of R_x is independently selected from the group consisting of hydrogen, aliphatic, alicyclic, heteroaliphatic, heterocyclic, aromatic, heteroaromatic, aryl, and heteroaryl.

65. **(Withdrawn/Currently Amended)** A medicament comprising a compound according to any one of claims 55 through 64 and a pharmaceutically acceptable carrier.

66-78. **(Cancelled)**

79. **(New)** A method comprising administering to a subject suffering from or susceptible to one or more cancers or cancerous conditions a medicament comprising a compound according to any one of claims 55 through 64 and a pharmaceutically acceptable carrier.

80. **(New)** A method comprising administering to a subject suffering from or susceptible to one or more conditions associated with cellular proliferation a medicament comprising a compound according to any one of claims 55 through 64 and a pharmaceutically acceptable carrier.

81. **(New)** A method comprising administering to a subject suffering from or susceptible to one or more NF-κB-dependent conditions a medicament comprising a compound according to any one of claims 55 through 64 and a pharmaceutically acceptable carrier.